Section 5. WING-CENTER SECTION

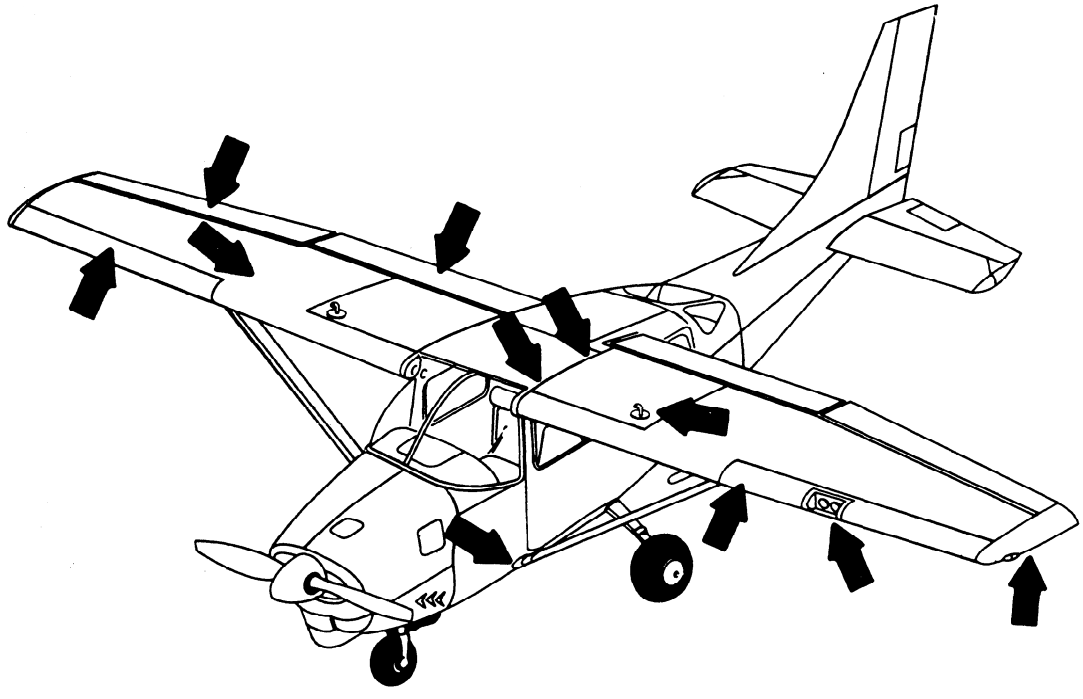

FIGURE 5-1. Inspection chart—wing—center section.

Determine the condition of the wing and center section by carefully inspecting fixed surfaces for signs of deterioration, distortion, and loose or missing rivets and screws, especially in the area of fabric or skin attachment to the structure. Inspect fabric or skin for tears, cuts, or other defects; and examine condition of protective covering. Inspect fabric at windshield for deterioration and security of attachment.

External distortion in any area may be an indication of internal failure. Inspect the interior through available inspection doors or holes. If internal failure is suspected and no inspection doors or holes exist, contact a certificated maintenance facility to make the necessary inspection and repair.

Inspect the internal brace fittings (struts or brace wires) where they attach to the wing structure, for distortion, cracks, or any other defects. Inspect clevis pins or bolts for wear, cracks, worn or damaged threads, and any other defects.

If any rigging adjustment of the external bracing has been accomplished, particular care should be taken to ensure that there is a sufficient number of threads holding in the adjusting terminals. Most terminals are provided with a test hole in the shank for making this inspection. If safety wire can be inserted through the test hole, the terminal is not being held by the required number of threads. Another method of ensuring that sufficient threads have been screwed into the barrel or female fittings is to count the threads on the

male fitting. If more than three threads show, the connection MAY not be satisfactory.

Determine that wing attachment fittings are not distorted, cracked, or damaged in any way, and that bolt holes are not elongated. Check wing attachment bolts for general condition and security of attachment. If wing attachment bolts are loose, determine the reason for looseness. Tighten to the torque values specified by the manufacturer if no other defect exists.

Be certain that hydraulic lines are free from cracks, kinks, dents, and leaks, and inspect for security of attachment and wear due to chafing. Ensure that hydraulic actuators are securely mounted and not leaking.

Any defects noted in the hydraulic system should be corrected by a properly qualified mechanic.

If the condition of the fabric is doubtful, the advice and assistance of a qualified person should be sought. Samples of the fabric may be taken from portions of the aircraft MOST affected by the elements and forwarded to an accredited testing laboratory for examination.

On fabric-covered surfaces, check drainage grommets for security of attachment and obstructions. Drainage grommets are reinforced openings usually located near the lowest point at the trailing edges of wings and tail surfaces. These openings provide for drainage of moisture and circulation of air to dry interior surfaces. Seaplane drainage grommets are identified by a hood over the center cutout which minimizes effect of spray during takeoff and landing. This type of grommet is sometimes used on landplanes in that part of the structure subject to splash from the landing gear when operating from wet or muddy fields.

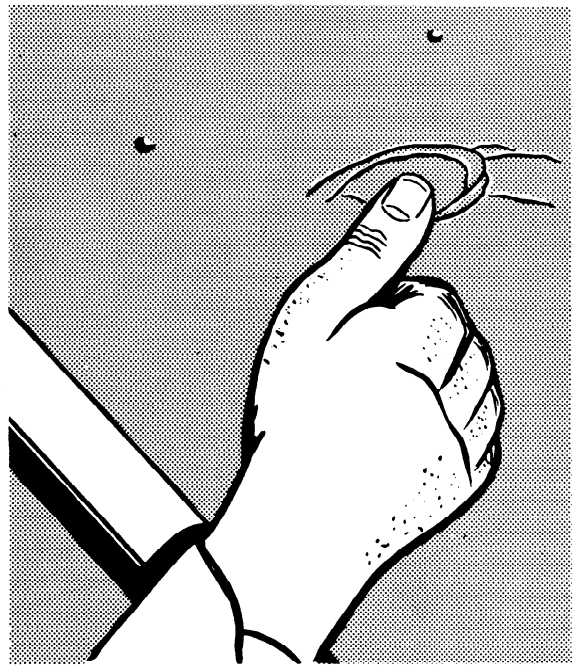

FIGURE 5-2. Indication of defective fabric.

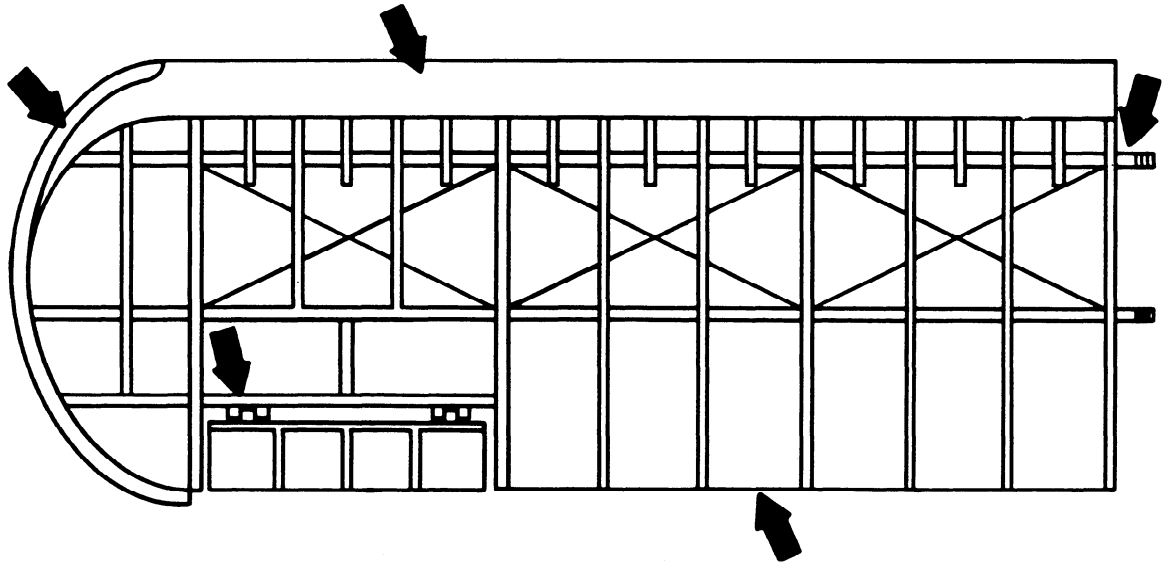

FIGURE 5-3. Wood structure inspection points.

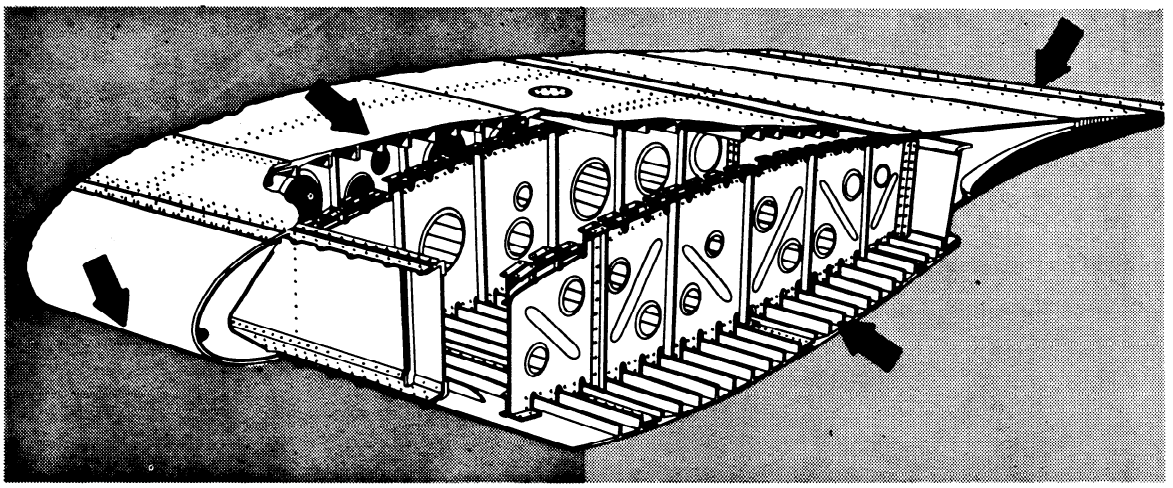

FIGURE 5-4. Metal structure inspection points.

Remove all inspection plates and fairings, and open all access doors so that internal inspection may be made. Examine the internal structure for condition of spars, ribs, compression members, rib lacing, and any internal form of skin attachment. Inspect spars and ribs for cracks, damage, and deterioration. Check the condition of glued joints and the protective finish on all internal structure.

Inspect compression members for security, cracks, kinks, bends, and condition of finish. Inspect drag and antidrag wires for proper tension, attachment, protective coating, and corrosion. Check all fittings attached to spars or ribs for security, protective coating, and corrosion. Check all forms of internal skin attachments for proper security.

Any defect or questionable item in the wing structure should be brought to the attention of qualified maintenance personnel.

Inspect movable surfaces (ailerons, flaps, and trim tabs) for proper operation. Check for loose or pulled rivets, distortion, and loose fabric or skin attachment. Examine hinges and horns for security of attachment, breaks, bends, loose or worn pins, proper lubrication, and safetying.

No repairs, refinishing, or repainting of balanced control surfaces (ailerons, elevators, rudders, and trim tabs) may be accomplished unless the surface is rebalanced. Control imbalance may cause a dangerous vibration or flutter condition. Rebalancing may only be accomplished by certificated personnel.

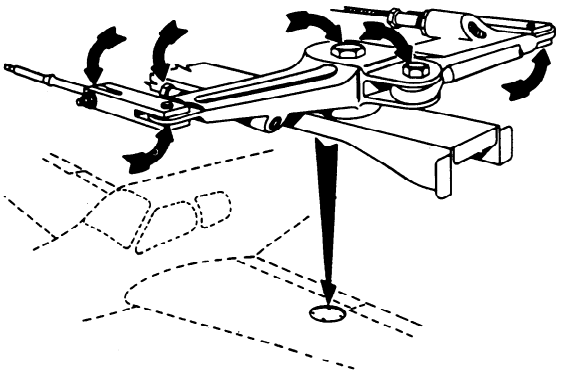

FIGURE 5-6. Control bellcrank checkpoints.

Examine the control mechanism for freedom of movement and proper operation. Inspect bellcranks for cracks, alignment, and security. Check cables for proper tension, fraying, wear, and proper routing through fairleads and pulleys.

Inspect hinges for breaks, cracks, distortion, and security of attachment.

Refer to the manufacturer's recommended procedures for lubrication.

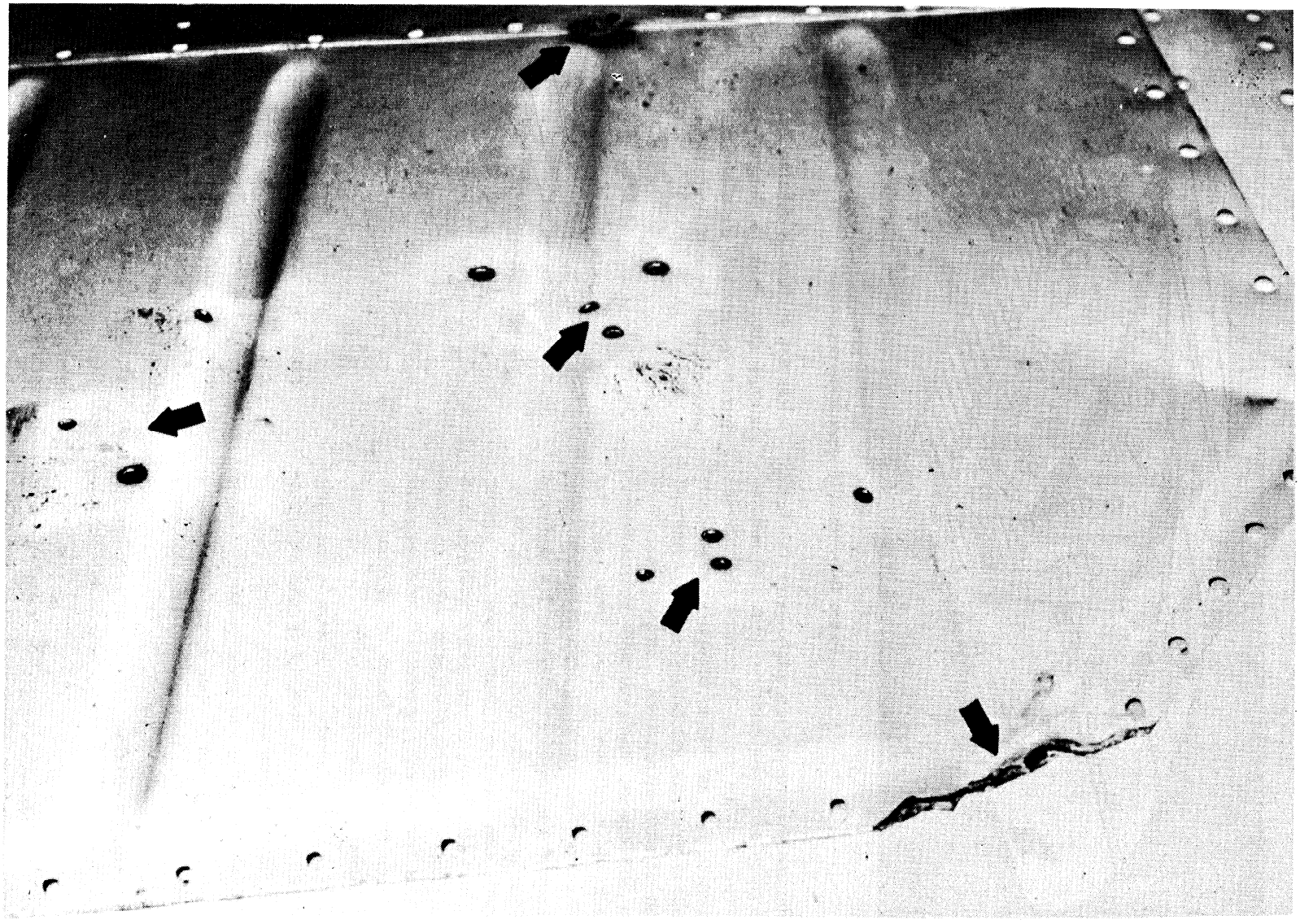

FIGURE 5-5. Lightning damage—flap, lower surface.

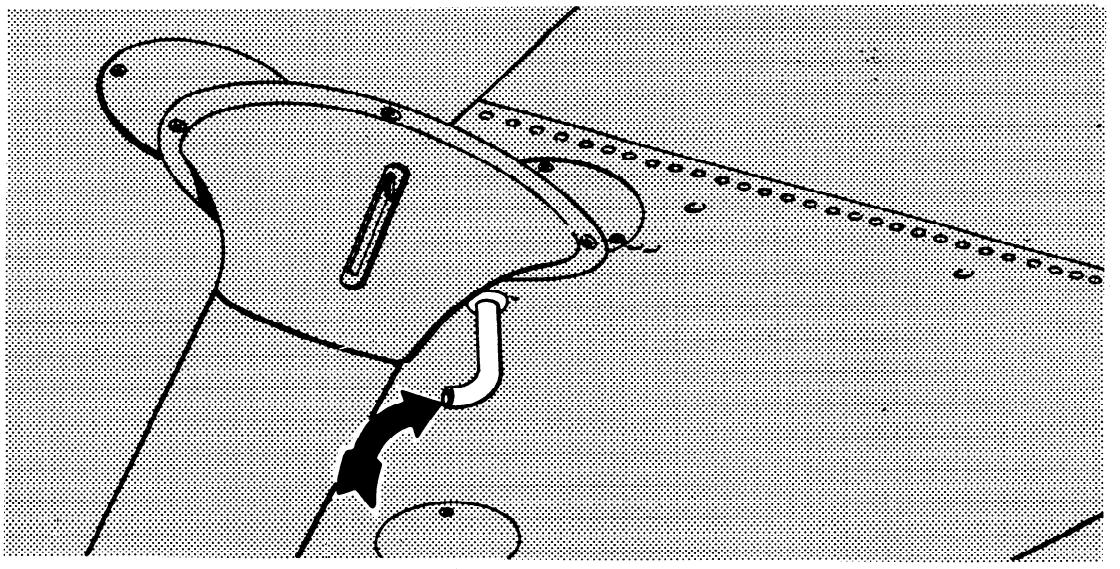

FIGURE 5-7. Fuel tank vent.

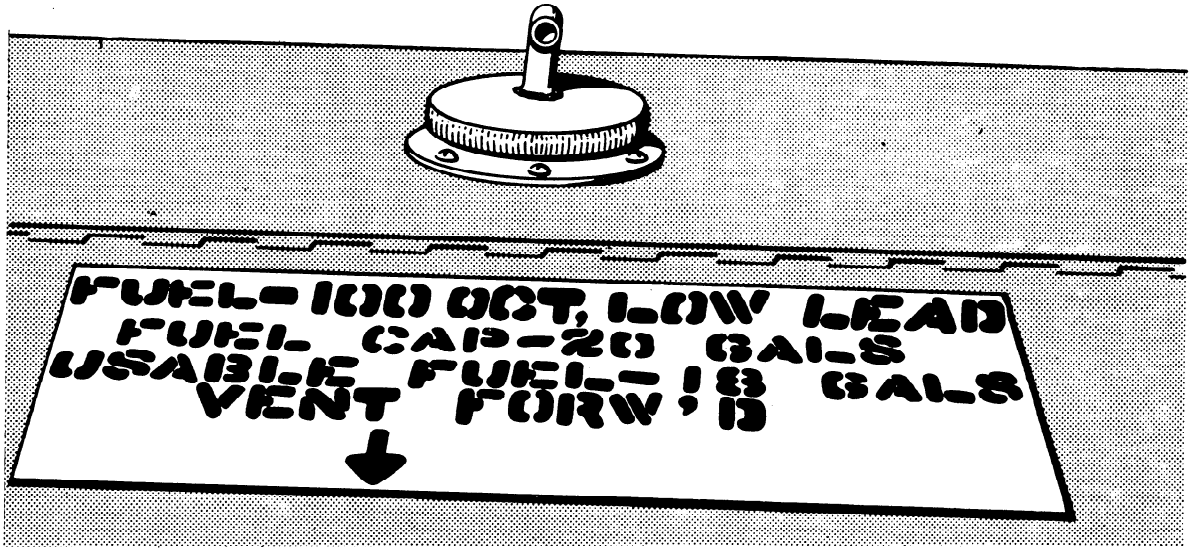

FIGURE 5-8. Fuel cap, vent, and placard.

Inspect fuel tanks for security of mounting and signs of leakage. Ensure that filler caps are secure and the vent is in the proper location and free from obstructions. Check fuel lines and connections for leaks, cracks, security of attachment, and chafing. Be sure overflow and drain lines are not kinked or broken and are properly routed to the outside air.

Improperly placed vents and lines that are kinked or otherwise distorted can cause "fuel starvation" and engine stoppage. As a precaution against using the wrong grade of fuel, make sure a legible placard is located at or near the fuel tank filler neck.

Inspect pitot tubes or masts for obstructions, distortion, and security. Make sure static vents

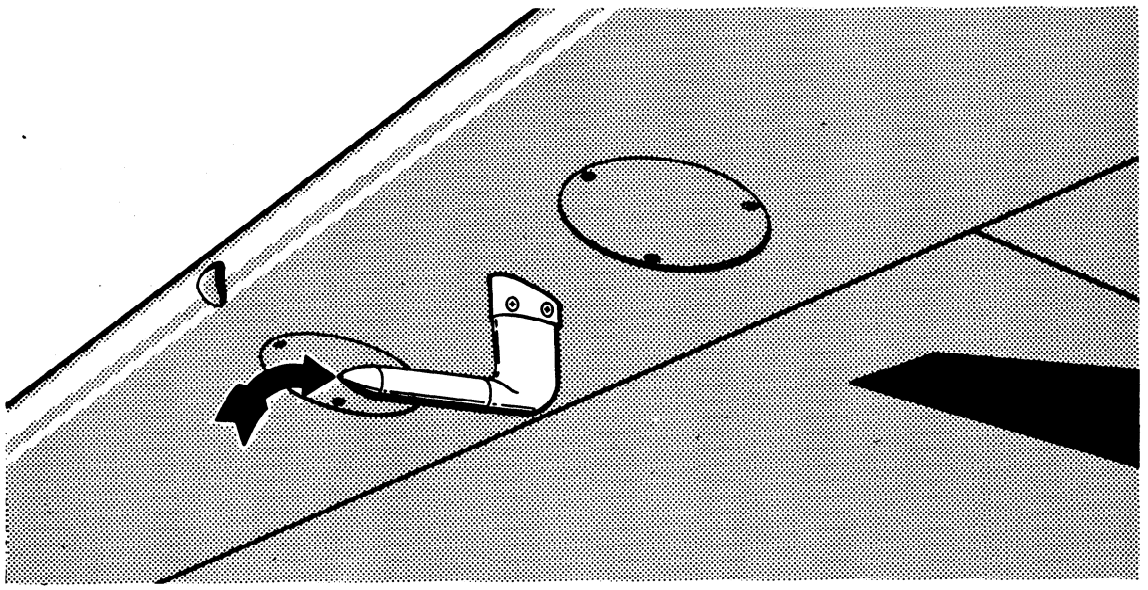

FIGURE 5-9. Pitot mast, airspeed.

(ports) are clean and free from obstruction. Periodically, drain and clean out pitot and static lines. Care must be used to ensure drains are properly closed since leaks have an adverse affect on the accuracy of instruments in the system.

Ensure that wiring is routed so that it cannot possibly become entangled with movable mechanisms. Inspect all wiring for chafing, proper installation, and security. Check installation and condition of grommets, plastic tubing, adapters, and proper taping.

Inspect leading edge of wing for damage. Inspect wing tips for damage and/or security of attachment.

The lens in the figure has been damaged by solvent and/or cleaning agents and age. Damaged or weakened lenses must be replaced since their failure can lead to severe wing damage. Inspect retractible landing lights for proper extension, retraction, and general condition.

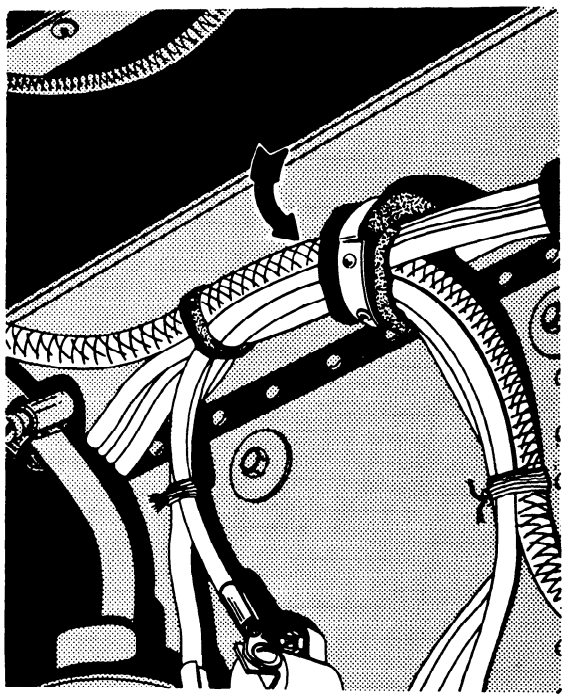

FIGURE 5-10. Electrical wiring, proper routing.

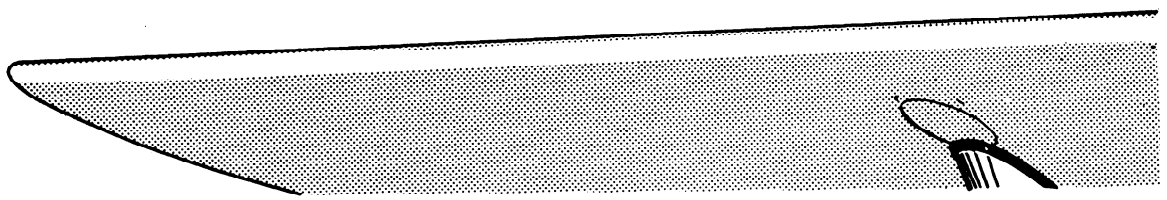

FIGURE 5-11. Satisfactory leading edge of wing.

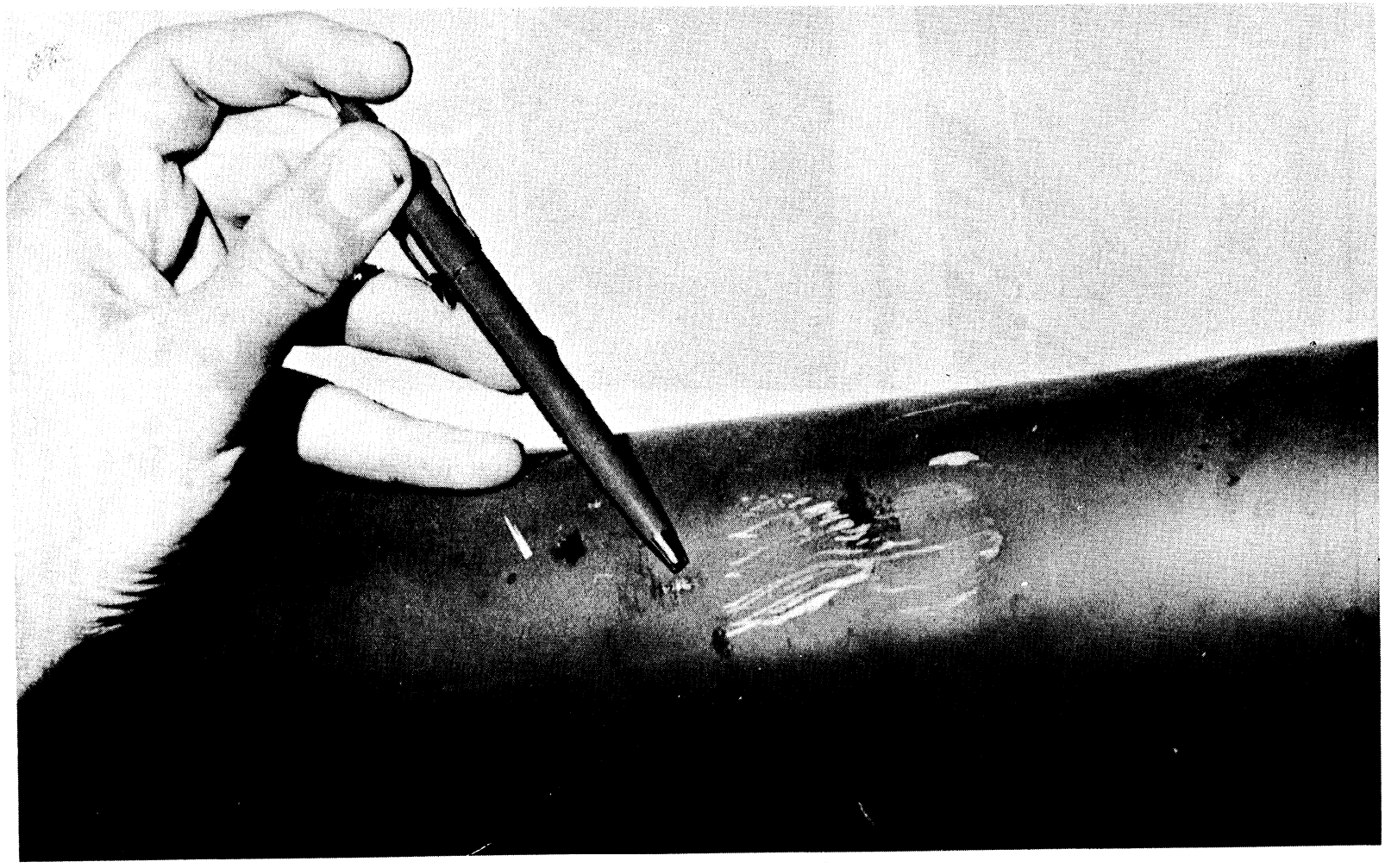

FIGURE 5-12. Dented leading edge of wing.

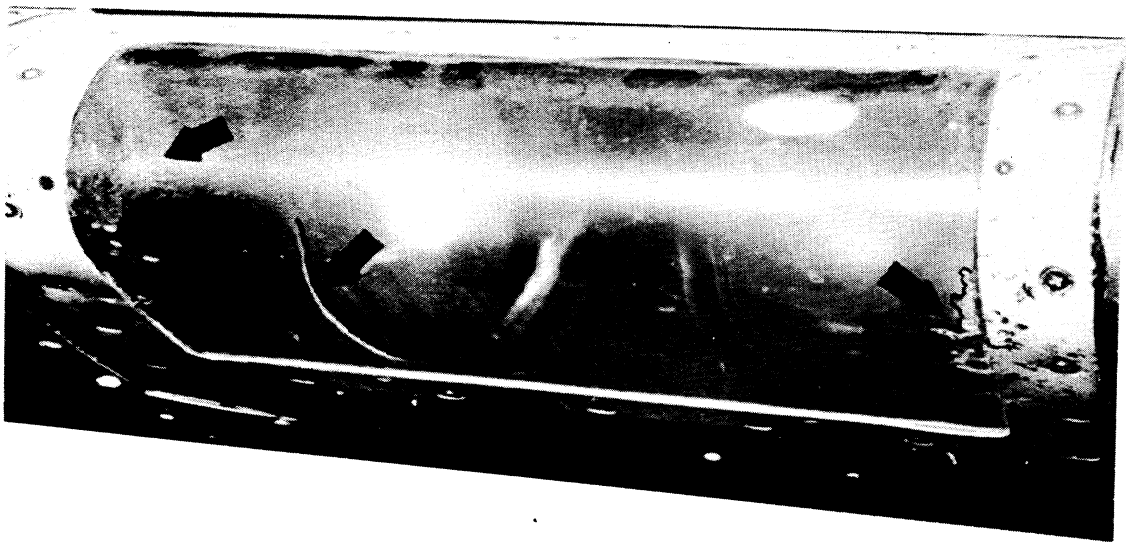

FIGURE 5-13. Damaged landing light lens.

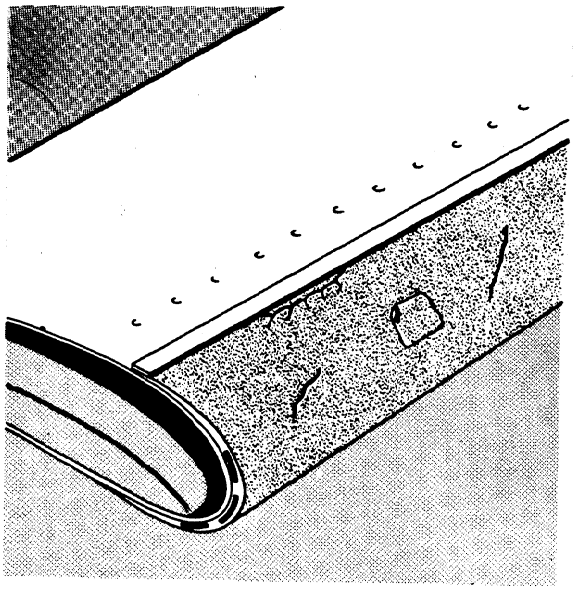

FIGURE 5-14. Deicer boot damage.

Inspect deicing boots for proper inflation and deflation. Check for punctures, bruises, loose patches, and security of attachment. Examine deices pressure lines and fittings for leakage, security, and general condition.

Rubber hose connections from boots to tubing must clear the holes through the structure, and must be secured to prevent distortion of the external surface of the boot.

If thermal anti-icing (hot wings) is utilized, inspect the ducts for leakage, attachment, and

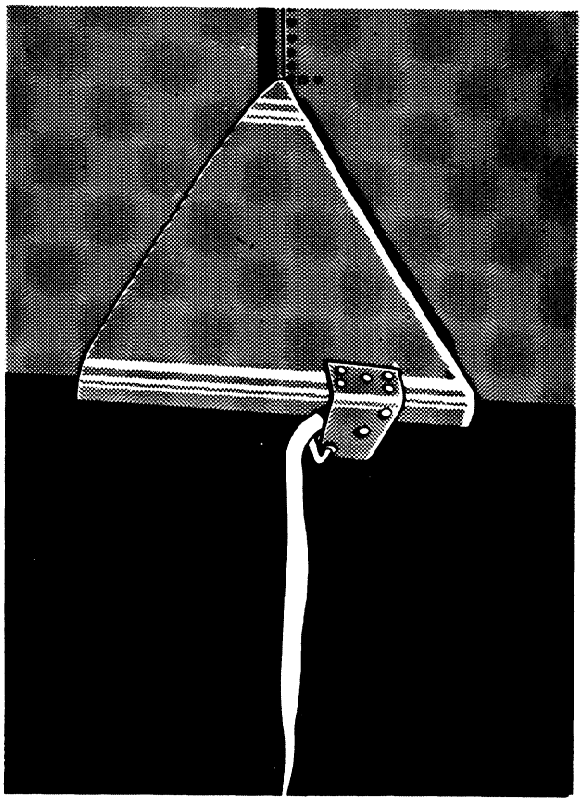

FIGURE 5-15. Block type gust lock.

satisfactory installation. Examine for corrosion and other defects.

Inspect control gust locks for condition. Ensure that they release completely and cannot possibly engage inadvertently.